AD-A285 693

(1)

AIRFIELD PAVEMENT EVALUATION

GRAND TURK ISLAND INTERNATIONAL AIRPORT BRITISH WEST INDIES

SEPTEMBER 1994

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*

2. REPORT DATE
September 1994

3. REPORT TYPE AND DATES COVERED
Final Report

4. TITLE AND SUBTITLE

Airfield Pavement Evaluation, Grand Turk International Airport, British West Indies

5. FUNDING NUMBERS

6. AUTHOR(S)

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8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Atlantic Command (USACOM)
Logistics Directorate J-4
1562 Mitscher Avenue Suite 200
Norfolk VA 23551-2488

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

A team from HQ Air Force Civil Engineer Support Agency (HQ AFCESA) evaluated the runway, taxiway and parking aprons at Grand Turk International Airport from 28-30 Jun 94. The purpose of the evaluation was to determine if Air Mobility Command (AMC) aircraft could operate at the airfield at normal mission gross weights. The evaluation found the western 6000 feet of the runway and South Apron could structurally support limited numbers of C-130s at normal mission gross weights. Limited numbers of C-5 and C-141 aircraft can operate on the western portion of the runway. Small numbers of C-141 and C-5 aircraft can operate on the South Apron at reduced gross weight of 242,000 pounds and 727,000 pounds respectively. PCNs to be reported in FLIP are: Runway 13/F/A/W/T - South Apron 25/F/A/W/T.

14. SUBJECT TERMS

Airfield Pavement
Airfield Pavement Evaluation
Allowable Gross Loads
Pavement Classification Numbers
Heavy Weight Deflectometer
Electronic Cone Penetrometer

15. NUMBER OF PAGES
28

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	

<u>TEAM PHOTO:</u> EVALUATION TEAM MEMBERS WITH CONTINGENCY VAN : LEFT TO RIGHT Lt Col GEORGE WALROND, ISLANDER, SSgt MICHAEL GEER, AND MSgt RALPH CROMPTON.

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SECTION I: INTRODUCTION

A. Scope

1. A team from HQ Air Force Civil Engineer Support Agency (HQ AFCESA) evaluated the runway, taxiway and parking aprons at Grand Turk International Airport from 28 - 30 June 1994. The team members were Lt Col George E. Walrond, P.E., MSgt Ralph E. Crompton and SSgt Michael G. Geer. The purpose of the evaluation was to determine if Air Mobility Command (AMC) aircraft could operate at the airfield at normal mission gross weights. USLANTCOM J-4 Section requested the evaluation. The Pavement Classification Numbers from previous evaluations showed a "C" category subgrade. Consequently, the airport manager and AMC restricted the C-130 aircraft maximum cargo loads. The primary objectives were to:

a. Determine in-place physical properties of the pavement structure for each feature,

b. Compute allowable gross loads (AGLs) and Pavement Classification Numbers (PCNs) for those features,

c. Rate the surface condition of each feature, and

d. Identify causes for existing or potential pavement distresses and make subsequent recommendations.

2. This report provides operations and civil engineering functions with airfield pavement strength and condition information useful for managing and controlling an airfield pavement system. Use the report results as an aid to:

a. Determine tire sizes, types, gear configuration, and gross weights for aircraft to ensure safe operations on an airfield feature.

b. Develop operations usage patterns for the airfield pavement system (for example parking plans, apron usage patterns, traffic flow, etc.).

c. Project or identify major maintenance or repair requirements for an airfield to support present or proposed aircraft missions. When necessary, the report's engineering data aids rehabilitation project design.

d. Help air base mission and contingency planning functions through the development of airfield layout and physical property data.

e. Develop and validate pavement system profile information.

f. Support programming documents that justify major pavement restoration projects.

3. The report uses detailed appendices to easily report the vast amount of information gathered. The following list describes each appendix:

Appendix	Description
A	Airfield Layout Plan: The drawings depict the airfield's pavement features, and primary pavements.
B	Construction History: This is an updated list showing the construction history for the evaluated features.
C	Core and Test Locations: A drawing of the core extraction locations. It shows core thicknesses and Electronic Cone Penetrometer (ECP) penetration locations.
D	Condition Survey: A drawing of feature surface condition ratings. These ratings are a qualitative assessment based upon visual observations. The rating scale is the same as used in AFR 93-5 (Reference 1).
E	Summary of Physical Property Data: A tabulation of physical properties of each pavement feature evaluated. Included are feature dimensions, material types, thicknesses of layers, and engineering properties.

B. Pavements Evaluated: The team evaluated all the runways, overruns, taxiways and aprons comprising the Grand Turk IAP airfield pavement system.

SECTION II: BACKGROUND DATA

A. Airfield Description

1. General: A single east to west runway (Runway 11/29), two aircraft parking aprons, and connecting taxiways comprise the airport. Light aircraft and airline traffic (Photo 1) use the North Apron, where a small international terminal is located. The South Apron (Photo 2) has a thicker pavement and is used for heavy traffic such as C-130s (Photo 3) and an occasional Boeing 727 cargo aircraft. The fire department is located on this ramp. Grand Turk Island appears to be a raised coral reef. The airport is located between salt salinas, where sea water salt was harvested in the recent past. The western end of the runway was built on a waterway connecting the salinas.

2. Aircraft Traffic Summary: The airport has approximately 40 operations of light and commuter aircraft daily. A Boeing 737 (Photo 5) arrives daily. There are also biweekly flights of a Boeing 727 cargo aircraft. During the evaluation, there were two or three C-130 flights daily. C-5 and C-141 aircraft have operated out of this airport in the past. They were parked on the South Apron.

3. Construction History: Airfield construction began in 1952. In 1968 a 2 inch asphalt concrete overlay was placed on the runway, and 1989 it was surfaced with a 1/2 inch sand seal. A 1300 feet extension to Runway 11 was made in 1980-82 and it was surfaced with a sand seal in 1989. No construction history data for the aprons or taxiway was found. The layer properties of the South Apron indicate it may have been constructed at the same time as the runway. The surface of the North Apron appears to have been placed in the 1980-82 project.

4. Previous Evaluations: The airfield pavements were evaluated in 1989 (Reference 2), and this report was the source of the construction history. The PCNs from this report were in general agreement with the results of this evaluation. However, it appears the author was describing the North Ramp in the text on the South Ramp, and vice versa for the South Ramp. In addition, the subgrade category for the 1100-1400 area from the Runway 11 threshold was found to be "B". HQ AMC sent a team composed of members Maj Thomas Mauzaka, 439 ALCF, Westover AFB, MA, Maj Gregory Staten, 349 ALCF, Travis AFB, SMSgt F. D. Fraini, Jr 439 ALCF, SMSgt Joseph Strouse, 439 ALCF and TSgt Tracey Turner, 439 ALCF to evaluate the airfield on 16 June 94 (Reference 3).

5. Climatic Data: The weather ranges from warm to hot with a low annual rainfall. The weather during the evaluation was 95 degrees F with two short rain showers.

6. Drainage: The runway slopes to drain to either side into surrounding ponds. The South Apron slopes toward the runway and then towards the ponds. The drainage is good. The soil surrounding the runways, taxiways and aprons is granular and porous, allowing standing water to drain quickly (Photo 4).

SECTION III: TEST PROCEDURES

A. Field Testing

1. The team used an electronic cone penetrometer (ECP) to penetrate through core holes drilled in the pavement (Figure One). The ECP is a long shaft tipped with an instrumented cone tip. The cone has pressure sensors on the tip and sleeve. The sleeve pressure divided by the tip pressure makes a friction ratio. The friction ratio and tip pressure are entering arguments for correlation curves to determine the soil type and soil California Bearing Ratio (CBR). The US Army Corps of Engineers Waterways Experiment Station (WES)located in Vicksburg, Mississippi developed the correlation curves. The plot of the tip pressure and sleeve friction are used to determine the layer thickness and CBRs of the base course, subbase and depth of subgrade.

2. Field testing included the extraction of 24, four inch diameter core samples. The cores verify pavement thickness and construction.

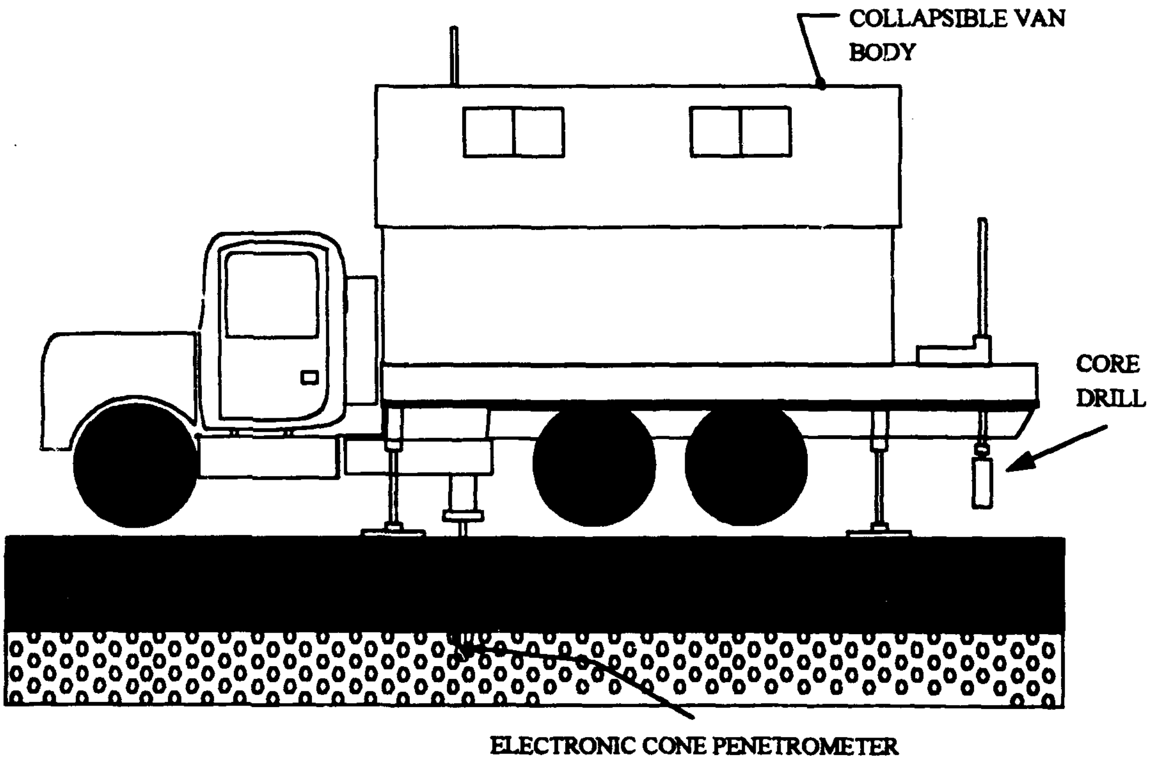

FIGURE 1: CONTINGENCY VAN

SECTION IV: METHODOLOGY OF ANALYSIS

A. Allowable Gross Loads (AGLs) and Pavement Classification Numbers (PCNs)

1. Analysis Technique: The layer thicknesses and CBR values determined from field testing were input into the GOAPE computer program to determine Allowable Gross Loads (AGLs) and Pavement Classification Numbers (PCNs) for each pavement feature. The Waterways Experiment Station wrote this program. Aircraft characteristics were taken from Reference 4.

2. Passes to Failure: An aircraft transiting a point on the pavement does a small amount of load damage. It takes many passes of aircraft to result in complete pavement failure. Pavements can be overloaded to some degree and not fail catastrophically, but the pavement life is used quicker. The AGLs and PCNs are usually reported for four pass intensity levels. For medium weight aircraft (C-130s and C-141) the pass levels are; a) pass intensity level one, 50,000, b) pass intensity level two, 15,000, c) pass intensity level three, 5,000, and d) pass intensity level four, 500. These pass intensity levels are passes to failure. A pass is an aircraft movement on a feature.

3. Results: The passes to failure were evaluated for all the four standard pass intensity levels, and it was found that pass intensity level one and two (50,000 and 15,000 passes respectively) severely limit the AGLs of all aircraft. The passes presented in this report are passes to failure for each aircraft. For example, if 5000 passes of a C-130 are done at the AGLs shown in Table One, the pavement should reach failure regardless of the number of passes of any other aircraft. Table One shows the AGLs and PCNs for this airfield.

TABLE ONE: AGLs and PCNs

Feature	Aircraft	Passes to failure	AGL	PCN
A01B	C-130	5000	A	
	C-141	5000	A	
	C-5	5000	A	
A02B	C-130	5000	161	25/F/A/W/T
	C-141	5000	200	24/F/A/W/T
	C-141	100	242	31/F/A/W/T
	C-5	5000	619	25/F/A/W/T
	C-5	100	727	30/F/A/W/T
R01C	C-130	5000	A	
	C-141	5000	A	
	C-5	5000	A	
R02A	C-130	5000	89	13/F/A/W/T
	C-141	5000	A	
	C-5	5000	A	
R03A	C-130	5000	149	27/F/B/W/T
	C-130	500	159	29/F/B/W/T
	C-141	5000	226	29/F/B/W/T
	C-141	500	237	34/F/B/W/T
	C-5	5000	739	34/F/B/W/T
	C-5	500	+	
R04A	C-130	5000	+	36/F/A/W/T
	C-141	5000	307	57/F/C/W/T
	C-5	5000	+	51/F/C/W/T
T01A	C-130	5000	125	19/F/A/W/T
	C-141		A	
	C-5		A	

Note: In AGL column, "A" Means aircraft cannot operate on this feature at the given pass level, and "+" Means aircraft can operate on this feature at all gross weights at the given pass level.

SECTION V: PAVEMENT ASSESSMENT

A. Pavement Condition Survey

A pavement condition survey, using procedures outlined in AFR 93-5, was conducted on the airfield pavements. The results, calculated by the U. S. Army Corps of Engineers computer program Micropaver (TM), are listed in Table Two.

TABLE TWO

Feature	Pavement Condition Index	Rating
A01B	CURSORY SURVEY	VERY GOOD
A02B	33	POOR
R01C	57	GOOD
R0[illegible]	52	FAIR
R03A	40	FAIR
R04A	37	FAIR
T01A	CURSORY SURVEY	VERY GOOD

2. Block cracking predominates over the entire airfield except for the North Apron (A01B) and its connecting taxiway. There are areas of low severity alligator cracking in the gear paths on the runway. This alligator cracking is in the early stage of formation as evidenced by closely spaced formation of parallel cracks. The four inch diameter asphalt concrete (AC) core samples taken from the runway show the surface cracking is confined to the 1/2 inch seal coat layer and does not penetrate in the upper layer of AC placed in 1968. This AC layer is in good condition and doesn't show any load related distresses. The original AC layer appears to have extensive full depth cracks, which probably prompted the need for the overlay. If the runway is overlaid , the block cracking of the slurry seal layer should not reflect in the overlay. However, the block cracking (Photos 6 and 7) on the South Apron (A02B) is full depth, and this cracking could result in reflection cracking in an overlay. This is the ramp where heavy aircraft are parked (Photo 8) and load related distresses will be generated sooner. All of the airfield pavements have depressions that were caused by poor construction. Some of the North Apron (A01B) depressions are possibly the start of rutting. This is based on the observation these depressions are in line with gear paths. The runway has areas of low severity rutting with depths ranging between 1/4 and 3/8 inch. This rutting is located where aircraft turn into the South Ramp and the taxiway to the North Ramp . There are patches in the Runway 11 turn around area (R01C) and at the Runway 29 (R04A) end to repair slippage damage caused by tire scrubbing by aircraft doing 180 degree turns. There is also a dual tire imprint in Feature R01C. Heavy aircraft should not operate on the Runway 11 turn around (R01C) and the first 1100 feet of Runway 11 (R02A) because this is a thin pavement covered with a 1/2 inch sand seal and has low allowable gross loads. Medium to heavy weight aircraft should make turn on the rest of the runway and South Apron with the largest turn radius possible.

SECTION VI: CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. General: Grand Turk International Airport is designed for light to medium weight aircraft. The aircraft operating surfaces are old, but have held up well over time. The pavement surface rates of deterioration have been low. The south apron is in need of rehabilitation. Medium weight aircraft such as Boeing 737s and 727s were observed using the eastern end of the runway for turn around and takeoff. The pavements in this area are thin, and are showing signs of scrubbing by tires during turns. Continued operations by aircraft in this portion of the runway will shorten these feature's life quickly.

2. Traffic Restrictions: C-130, C-141 and C-5 can land and takeoff on the runway exclusive of the first 1100 feet of Runway 11 (R01C and R02A). There is a weak feature, R03A, that should be avoided for takeoff. This is the area from 1100 to 1400 from the Runway 11 Threshold. This portion of the runway does not have a macadam base, which makes it weaker than the rest of the runway. Landing in this portion of the runway should be safe because the aircraft wings are producing lift, and not putting the full weight on the landing gear. If C-5s and C-141s operate on the runway and South Apron, the pavement life of these features will be used up quicker, consequently reducing the total number of C-130 sorties allowed.

B. Recommendations

1. Large aircraft such as the C-130 should not operate in the Runway 11 overrun and the first 1100 feet of Runway 11. The portion of the runway from 1100-1400 feet from the Runway 11 threshold should not be used for takeoff by large aircraft. If required due to density altitude and aircraft gross weight, the number of takeoffs started in this portion of the runway should be held to an absolute minimum. It is recommended that aircraft start their takeoff roll from the west end of the South Apron's entry to the runway. This prevents the aircraft from having to turn around on the runway and the possible damage from turning. The large aircraft parking on the South Apron should be marshaled to parking with the widest possible turning radius when space permits. This pavement is old and brittle. It will begin to break up under high pass levels and tight turning conditions. Also, heavy aircraft loading equipment will break up the pavement if not operated carefully. This ramp should be overlaid.

2. The first 1100 feet of Runway 11 should be overlaid to strengthen this area. The rest of the runway does not require an overlay for C-130 traffic. The North Ramp and its connecting taxiway do not require an overlay at this time as long as the traffic is restricted to light aircraft. An overlay may be required within the next 10 years if the depressions mentioned earlier are load related and progress into rutting with associated alligator cracking. The North Ramp is not strong enough for medium to heavy weight aircraft.

GLOSSARY

Allowable Gross Load (AGL) - The maximum aircraft load a pavement feature can support for a particular number of passes.

Base or Subbase Courses - Natural or processed materials placed on the subgrade beneath the pavement.

Compacted Subgrade - The upper part of the subgrade compacted to a density greater than the portion of the subgrade below.

Feature - A unique portion of the airfield pavement distinguished by traffic area, pavement type, pavement surface thickness and strength, soil layer thicknesses and strengths, construction period, and surface condition.

Pass - On a runway, the movement of an aircraft over an imaginary line 500 feet down from the approach end. On a taxiway, the movement of an aircraft over an imaginary line connecting an apron with the runway. AFR 93-5, Chapter 2.

Pass Intensity Levels (PIL) - Specific repetitions of aircraft over a pavement feature, regardless of time, that are dependent on aircraft design category. AFR 93-5, Chapter 2.

Pavement Condition Index (PCI) - A numerical indicator between 0 and 100 that reflects the surface operational condition of the pavement. AFR 93-5, Chapter 3.

Primary Pavements - Those features that are absolutely necessary for mission aircraft operations. AFR 93-5, Chapter 4.

Subgrade - The natural soil in-place, or fill material, upon which a pavement, base, or subbase course is constructed.

Type A Traffic Areas - Type A Traffic Areas are those pavement facilities that receive the channelized traffic and full design weight of the aircraft. AFM 88-6, Chapter 1.

Type B Traffic Areas - Type B Traffic Areas are considered to be those areas where traffic is more nearly uniform over

the full width of the pavement facility, but which receive the full design weight of the aircraft. AFM 88-6, Chapter 1.

Type C Traffic Areas - Type C Traffic Areas are considered to be those on which the volume of traffic is low or the applied weight of the operating aircraft is less than the design weight. AFM 88-6, Chapter 1.

PAVEMENT CONDITION EVALUATION TERMINOLOGY

CONDITION RATING	DEFINITION
EXCELLENT	PAVEMENT HAS MINOR OR NO DISTRESS AND WILL REQUIRE ONLY ROUTINE MAINTENANCE.
VERY GOOD	PAVEMENT HAS SCATTERED LOW SEVERITY DISTRESSES WHICH SHOULD NEED ONLY ROUTINE MAINTENANCE.
GOOD	PAVEMENT HAS A COMBINATION OF GENERALLY LOW AND MEDIUM SEVERITY DISTRESSES. MAINTENANCE AND REPAIR NEEDS SHOULD BE ROUTINE TO MAJOR IN THE NEAR-TERM.
FAIR	PAVEMENT HAS LOW, MEDIUM, AND HIGH SEVERITY DISTRESSES WHICH PROBABLY CAUSE SOME OPERATIONAL PROBLEMS. MAINTENANCE AND REPAIR NEEDS SHOULD RANGE FROM ROUTINE TO RECONSTRUCTION IN THE NEAR-TERM.
POOR	PAVEMENT HAS PREDOMINANTLY MEDIUM AND HIGH SEVERITY DISTRESSES CAUSING CONSIDERABLE MAINTENANCE AND OPERATIONAL PROBLEMS. NEAR-TERM MAINTENANCE AND REPAIR NEEDS WILL BE INTENSIVE.
VERY POOR	PAVEMENT HAS MAINLY HIGH SEVERITY DISTRESSES WHICH CAUSE OPERATIONAL RESTRICTIONS. REPAIR NEEDS ARE IMMEDIATE.
FAILED	PAVEMENT DETERIORATION HAS PROGRESSED TO THE POINT THAT SAFE AIRCRAFT OPERATIONS ARE NO LONGER POSSIBLE. COMPLETE RECONSTRUCTION IS REQUIRED.

CONVERSION FACTORS

BRITISH TO INTERNATIONAL SYSTEMS (SI) OF UNITS

British units of measurements are used in this report and can be converted to SI (Metric) units as follows:

TO CONVERT	TO	MULTIPLY BY
LENGTH		
inch (in)	millimeter (mm)	25.400
inch (in)	meter (m)	0.0254
foot (feet)	meter (m)	0.305
yard (yd)	meter (m)	0.915
mile (mi)	kilometer (km)	1.609
AREA		
square inch (in^2)	square millimeter (mm^2)	645.2
square inch (in^2)	square meter (m^2)	0.0006452
square foot ($feet^2$)	square meter (m^2)	0.093
square yard (yd^2)	square meter (m^2)	0.8361
square mile (mi^2)	square kilometers (km^2)	2.59
acres	square kilometers (km^2)	0.004046
VOLUME		
cubic inch (in^3)	cubic millimeter (mm^3)	16487.0
cubic foot ($feet^3$)	cubic meter (m^3)	0.028
cubic yard (yd^3)	cubic meter (m^3)	0.7646
MASS		
pound (lb)	kilogram (kg)	0.454
FORCE		
pound (lb f)	Newton (n)	4.448
kip (1000 lb f)	kilogram (kg)	453.6
STRESS		
pound per square inch (psi)	kilo Pascals (kPa)	6.895
MODULUS OF SUBGRADE REACTION (K-VALUE)		
pounds per square inch per inch (psi/in)	kilo Pascals per millimeter (kPa/mm)	0.2715

CONVERSION FACTORS (Cont.)

DEGREES		
degrees Fahrenheit(^{o}F) (F^{o}-32)	degrees Celsius (^{o}C)	5/9
DENSITY		
pounds per cubic foot (pounds mass)	kilogram per cubic meter (kg/m^3)	16

REFERENCES

1. AFR 93-5, Procedures for US Army and US Air Force Airfield Condition Surveys, July 1989.

2. Grand Turk IAP Pavement Evaluation, British Public Works Service, 1989.

3. Airfield Survey Checklist, HQAMC/INO, 16 Jun 94

4. Aircraft Characteristics for Airfield Pavement Design and Evaluation, Air Force Engineering and Services Center, Tyndall AFB FL, May 1988.

DISTRIBUTION

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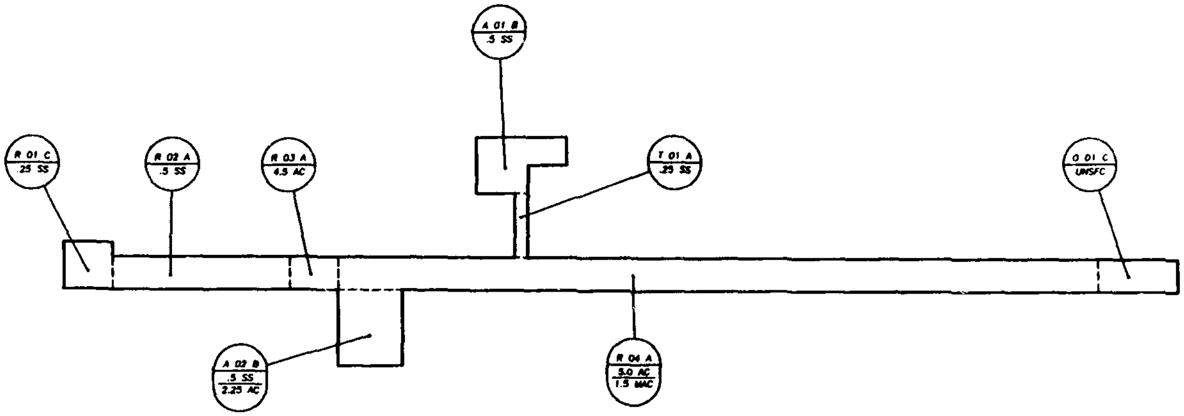


LEGEND

R 02 A / .5 SS — FEATURE DESIGNATION (SEE NOTE 1) / PAVEMENT THICKNESS IN INCHES & TYPE

TYPE OF FEATURE

R - RUNWAY
T - TAXIWAY
A - APRON
O - OVERRUN

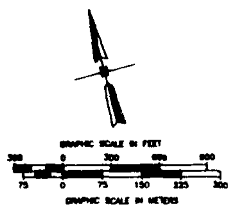
TYPE TRAFFIC AREA (SEE NOTE 2)

A - A TYPE TRAFFIC
B - B TYPE TRAFFIC
C - C TYPE TRAFFIC

\- - - - CHANGE IN FEATURE DESIGNATION
AC ASPHALTIC CONCRETE
SS SAND SEAL
UNSFC UNSURFACED

NOTES:

1. FEATURE DESIGNATION DENOTES TYPE OF FEATURE, NUMBER OF FEATURE FOR GIVEN FEATURE TYPE AND TYPE TRAFFIC AREA.
2. TRAFFIC AREA DESIGNATIONS ARE BASED ON AFM 88-6, CHAP. 1.
3. FEATURE DESIGNATIONS DO NOT CORRESPOND WITH THOSE FROM PREVIOUS REPORTS AND DRAWINGS.

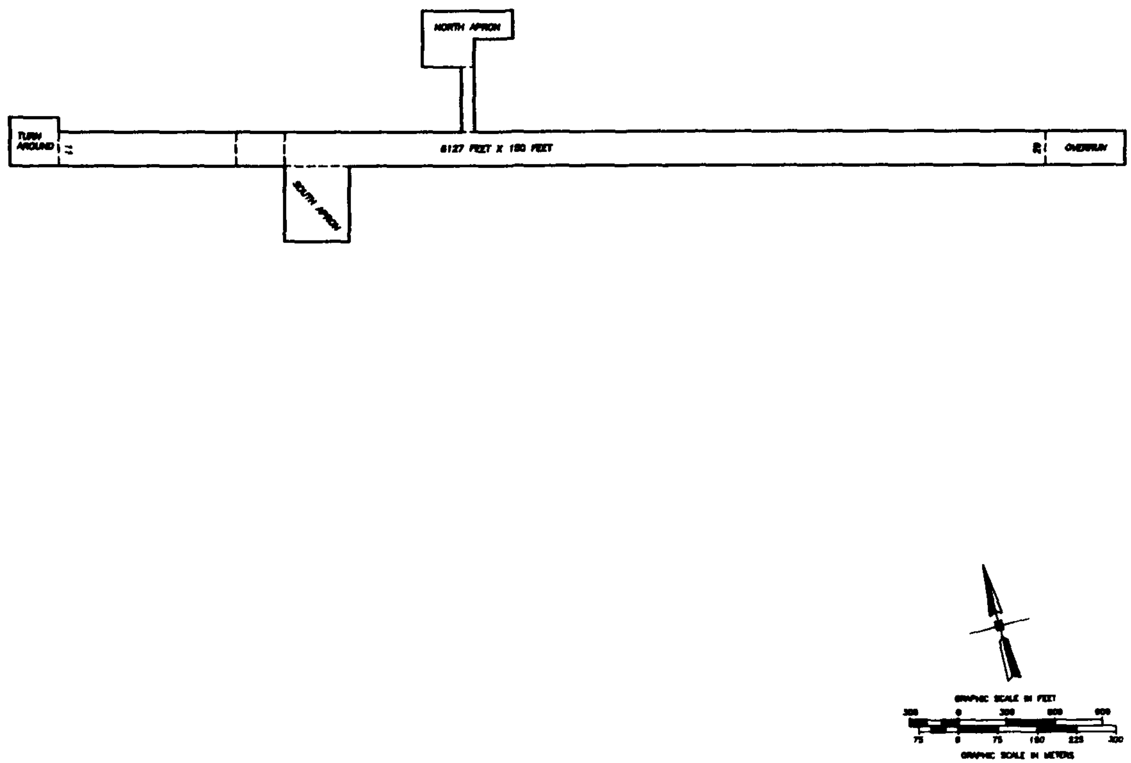


UNITED STATES AIR FORCE
CIVIL ENGINEER SUPPORT AGENCY
TYNDALL AIR FORCE BASE, FLORIDA

AIRFIELD LAYOUT PLAN

GRAND TURK IAP, BRITISH WEST INDIES

A-1	WALROND	SEPT 84	APPENDIX A
	SALISBURY	GRAPHIC	SHEET 1 OF 2



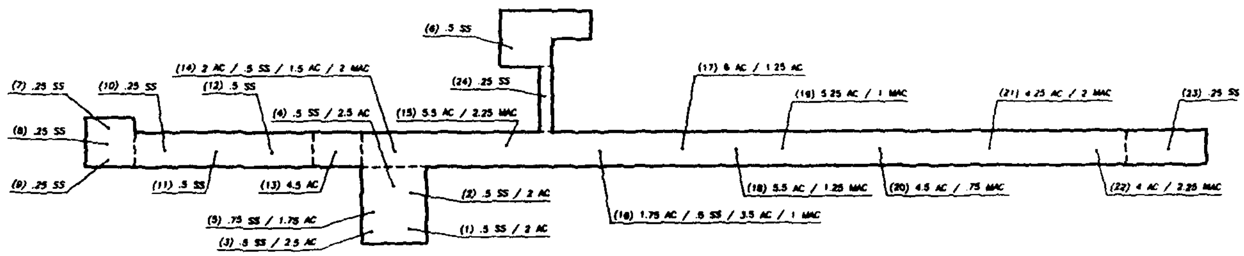
UNITED STATES AIR FORCE
CIVIL ENGINEER SUPPORT AGENCY
TYNDALL AIR FORCE BASE, FLORIDA

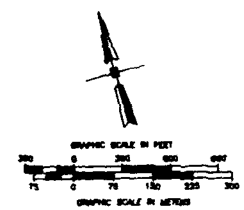
AIRFIELD DESIGNATIONS

GRAND TURK IAP, BRITISH WEST INDIES

WALROND	SEPT 94	APPENDIX A
SALISBURY	GRAPHIC	SHEET 2 OF 2

A-2





LEGEND

(22) 4 AC / 2.25 MAC — CORE LOCATION, CORE NUMBER, PAVEMENT THICKNESS IN INCHES, PAVEMENT TYPE AND ELECTRONIC CONE PENTROMETER (ECP) TEST LOCATIONS

SS SAND SEAL
AC ASPHALTIC CONCRETE
MAC MACADAM

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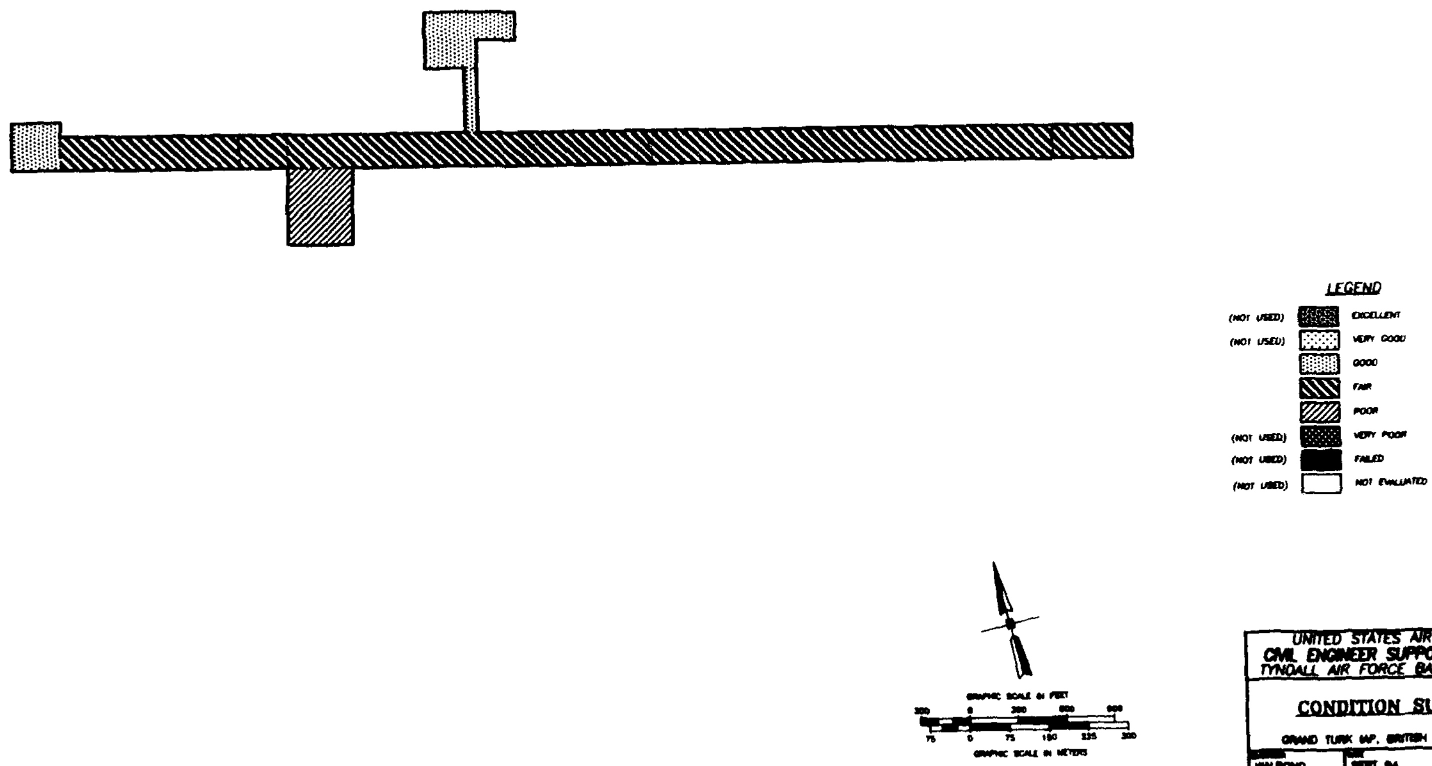
CIVIL ENGINEER SUPPORT AGENC
TYNDALL AIR FORCE BASE, FLORI

CORE / TEST LOCATION

GRAND TURK IAP, BRITISH WEST INDIES

WALROND	SEPT 94	APPENDIX
TIDWELL	GRAPHIC	SHEET 1 (

C-1



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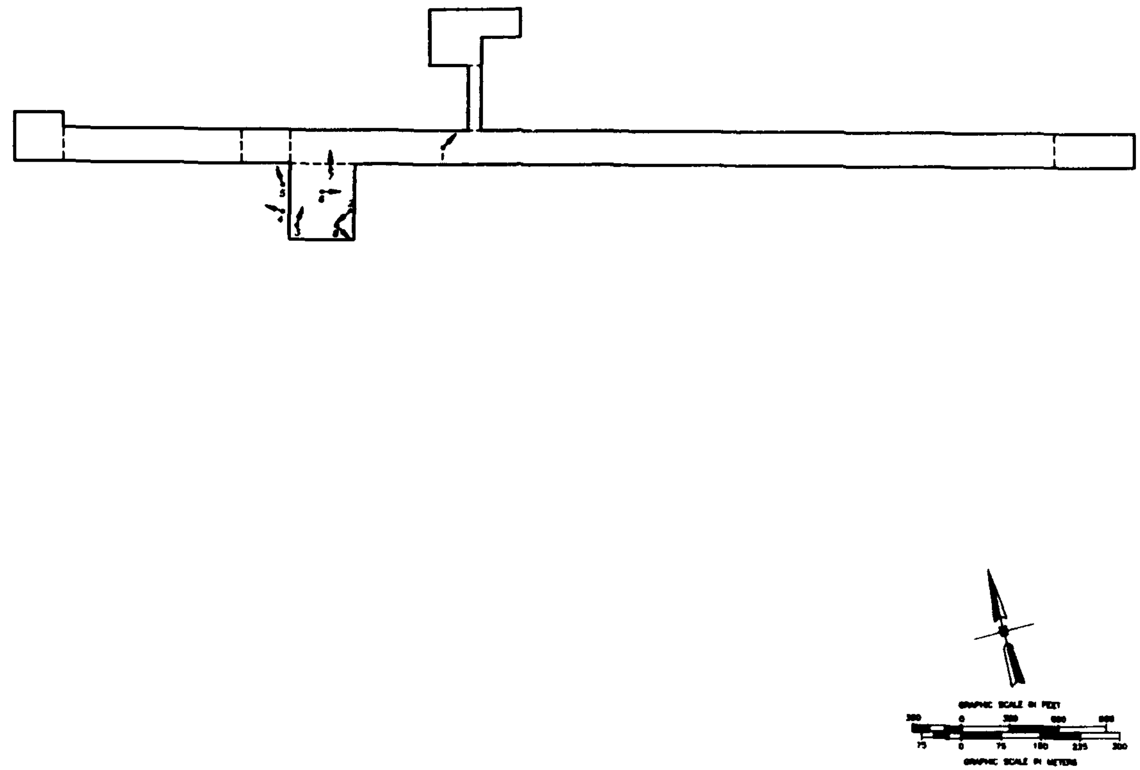
TYNDALL AIR FORCE BASE, FLORI

CONDITION SURVEY

GRAND TURK IAP, BRITISH WEST INDIES

WALROND	SEPT 94	APPENDIX
TOWELL	GRAPHIC	SHEET 1 O

D-1



LEGEND

PHOTOGRAPH LOCATION DIRECTION AND NUMBER

UNITED STATES AIR FORCE
CIVIL ENGINEER SUPPORT AGENCY
TYNDALL AIR FORCE BASE, FLORIDA

PHOTOGRAPH LOCATIONS

GRAND TURK IAP, BRITISH WEST INDIES

D-2	WALROND	SEPT 94	APPENDIX D
	SALISBURY	GRAPHIC	SHEET 2 of 4

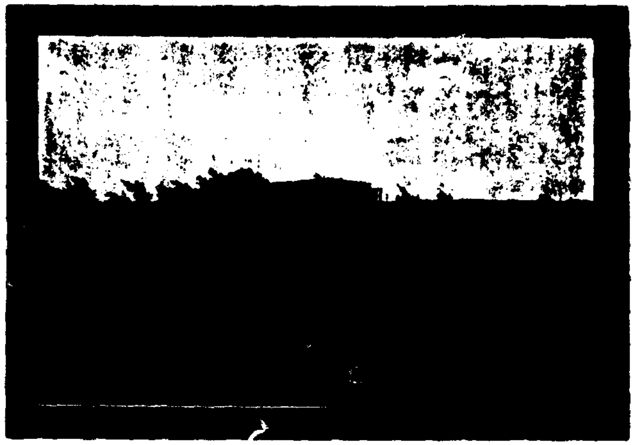


PHOTO 1 : NORTH APR0N, WITH BOEING 737 TAXIING TO RUNWAY.

PHOTO 2 : SOUTH APRON, LOOKING TOWARDS FIRE STATION (FEATURE A 02 B).

PHOTO 3 : C-130 TAXIING INTO SOUTH APRON (FEATURE A 02 B).

PHOTO 4 : GENERAL VIEW OF TERRAIN SURROUNDING AIRFIELD.

UNITED STATES AIR FORCE
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PHOTOGRAPHS

GRAND TURK IAP, BRITISH WEST INDIES

WALROND	SEPT 94	APPENDIX D
TIDWELL	NONE	SHEET 3 OF 4

D-3

PHOTO 5 : BOEING 737 ON LANDING ROLL (FEATURE R 02 A).

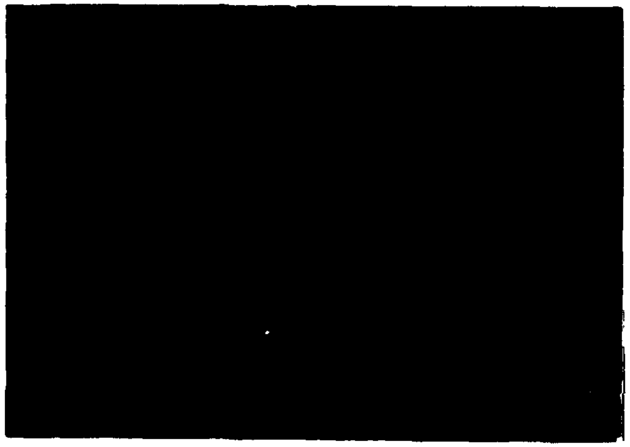

PHOTO 6 : BLOCK CRACKING ON FEATURE A 02 B.

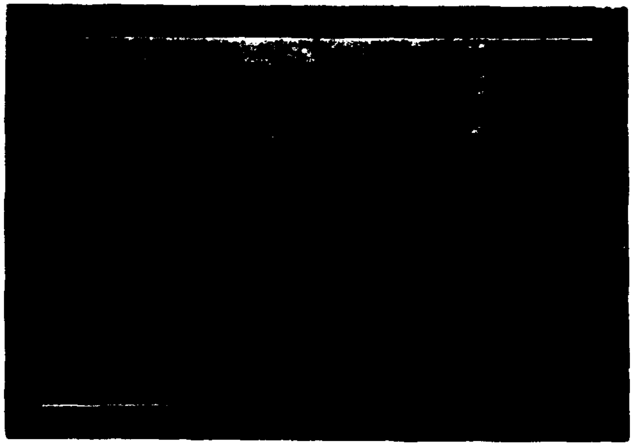

PHOTO 7 : BLOCK CRACKING IN AREA WHERE SOUTH RAMP CONNECTS TO THE RUNWAY (FEATURE A 02 B)

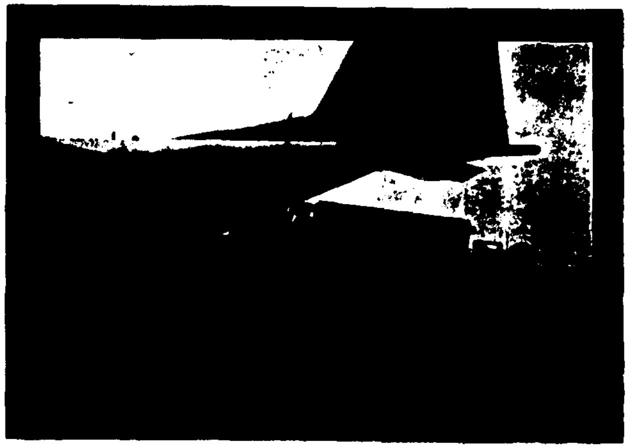

PHOTO 8 : C-130 LOADING OPERATION ON SOUTH RAMP (FEATURE A 02 B)

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PHOTOGRAPHS

GRAND TURK IAP, BRITISH WEST INDIES

WALROND	SEPT 94	APPENDIX D
TIDWELL	NONE	SHEET 4 OF 4

D-4

SUMMARY OF PHYSICAL PROPERTY DATA																		
FACILITY					OVERLAY PAVEMENT			PAVEMENT			BASE			SUBBASE			SUBGRADE	
FEAT	IDENT	LGTH (ft)	WDTH (ft)	GEN COND	THICK (in)	DESCRP	1000E FLEX	THICK (in)	DESCRP	1000E FLEX	THICK (in)	DESCRP	1000E K/CBR	THICK (in)	DESCRP	1000E CBR	DESCRP	1000E K/CBR
R01C	RUNWAY 11 TURN AROUND	300	200	GOOD			—	.25	SAND SEAL (SS)	—	20	GM	59	32.5	GM	26	SM	15
R02A	RUNWAY 11 APPROACH END	1197	150	FAIR			—	.5	SAND SEAL (SS)	—	23	GM	63	60	GM	27	SM	45
R03A	RUNWAY 11 APPROACH END	300	150	FAIR			—	4.5	AC	—	13	GM	83	60	GM	12	SM	7
R04A	RUNWAY 11/29	4630	150	FAIR	5	AC	—	1.5	MAC	—	12.75	GM	67	46	GM-SM	24	SM	11
001C	RUNWAY 29 OVERRUN	1000	150	N/A			—		UN-SURFACED	—	18	GM	67	37	GM	50	SM	17
T01A	TAXIWAY TO NORTH APRON	450	60	VERY GOOD			—	.25	SAND SEAL (SS)	—	25	GM	92	9	GM	35	GM	24
A01B	NORTH APRON	525	375	VERY GOOD			—	.5	SAND SEAL (SS)	—	20	GM	50	34	SM	20	SM	5
A02B	SOUTH APRON	400	270	POOR	.5	SAND SEAL (SS)	—	2.25	AC	—	20	SM	100	25	SM	88	GM	64